

## Component Specification

### Auto Electricity

#### NFQ Level 5

#### 5N2137

#### 1. Component Details

<b>Title</b>	Auto Electricity
<b>Teideal as Gaeilge</b>	Uathleictreachas
<b>Award Class</b>	Minor
<b>Code</b>	5N2137
<b>Level</b>	5
<b>Credit Value</b>	15
<b>Purpose</b>	The purpose of this award is to equip the learner with the knowledge, skill and competence to apply electrical principles and theories to components utilised in the motor technology sector

#### Learning Outcomes

Learners will be able to:

- 1 Analyse key principles and theoretical concepts relating to auto electrical components and systems currently utilised in the motor technology sector
- 2 Interpret key terminology and features in relation to auto electrical components to include electrical circuits, standard measurements and units, electromagnetism and electrical systems
- 3 Analyse the key characteristics of a range components and systems to include current and static electricity, electromagnetism, batteries, capacitors, cell types, switch types, conductors and semi conductors and relays

- 4 Explain with the aid of sketches the key features, characteristics and function of a simple direct current (DC) motor, starter motor , alternator and ignition system
- 5 Differentiate with the aid of graphs the characteristics and features of alternating (AC) and direct (DC) currents and voltages
- 6 Explain the operating principles of a single coil AC generator and a DC generator
- 7 Comment on the key characteristics and functions of a variety of components of an ignition system to include spark plugs, leads, distributor and dwell angle
- 8 Analyse the effect and characteristics of magnetic fields in relation to auto electrical circuits
- 9 Employ a range of procedures and equipment to manipulate, measure and test auto electrical circuits and components to include safe use of multimeters, rheostats, fuses and thermostats
- 10 Safely employ appropriate techniques to dismantle and reassemble a range of components to include starter motors , alternators, electric horns and a speedometer
- 11 Utilise circuit diagrams to construct and test a range of low voltage electrical circuits
- 12 Demonstrate an ability to contribute to, and improve on, health and safety procedures in a motor technology workshop environment
- 13 Apply a range of electrical related calculations to include voltages, currents and resistances
- 14 Design and construct a range of auto electrical lighting circuits to include courtesy, brake, reversing, indicator, hazard, parking and headlight
- 15 Suggest and apply appropriate diagnostic strategies to identify and rectify faults in auto electrical components and circuits.

## **Assessment**

### **General Information**

Details of FET assessment requirements are set out in [Assessment Guidelines for Providers.](#)

All FET assessment is criterion referenced. Successful achievement of the award is based on learners attaining the required standards of knowledge, skill or competence.

The techniques set out below are considered the optimum approach to assessment for this component. In exceptional circumstances providers may identify alternative assessment techniques through the provider's application for programme validation which are **reliable** and **valid** but which are more appropriate to their context.

Assessment of a number of components may be integrated across programmes for delivery, provided that the learning outcomes of each minor award are assessed.

Group or team work may form part of the assessment, provided each learner's achievement is separately assessed.

All providers are required to submit an assessment plan as part of their application for programme validation. Assessment Plans will include information relating to scheduling and integration of assessment. See current FET validation guidelines at [www.qqi.ie](http://www.qqi.ie).

## Assessment Techniques

In order to demonstrate that they have reached the standards of knowledge, skill and competence identified in all the learning outcomes, learners are required to complete the assessment(s) below.

The assessor is responsible for devising assessment instruments (e.g. project and assignment briefs, examination papers), assessment criteria and mark sheets, consistent with the techniques identified below and FETAC's assessment requirements.

Programme validation will require providers to map each learning outcome to its associated assessment technique. See current FET validation guidelines at [www.qqi.ie](http://www.qqi.ie).

All learning outcomes **must** be assessed and achieved

Skills Demonstration	60%
Examination - Theory	40%

## Description

### Skills Demonstration

*A skills demonstration is used to assess a wide range of practical based learning outcomes including practical skills and knowledge. A*

*skills demonstration will require the learner to complete a task or series of tasks that demonstrate a range of skills.*

### **Examination - Theory**

*An examination provides a means of assessing a learner's ability to recall and apply knowledge, skills and understanding within a set period of time and under clearly specified conditions.*

*A theory-based examination assesses the ability to recall, apply and understand specific theory and knowledge.*

### **Recognition of Prior Learning (RPL)**

Learners may be assessed on the basis of their prior knowledge and experience. Providers must be specifically quality assured to assess learners by this means. To do so they must complete B10, see Provider's Quality Assurance Guidelines and be included on the Register of RPL approved providers. See RPL Guidelines at [www.fetac.ie](http://www.fetac.ie) for further information and registration details.

### **Grading**

Pass	50% - 64%
Merit	65% - 79%
Distinction	80% - 100%

### **Specific Validation Requirements**

The provider must have all of the following in place to offer this award:  
An appropriate range of auto electric equipment and components

### **Supporting Documentation**

None

### **Access**

To access programmes leading to this award the learner should have reached the standards of knowledge, skill and competence associated with the preceding level of the National Framework of Qualifications. This may have been achieved through a formal qualification or through relevant life and work experience.

### **Transfer**

Successful completion of this component award enables the learner to transfer to programmes leading to other certificates where this component is a mandatory or an elective requirement.

## **2. FET Award Standards**

QQI award standards are determined within the National Framework of Qualifications (NFQ), <http://www.nfq-qqi.com>. QQI determines standards for the education and training awards that it makes itself and that are made by providers to whom it has delegated authority to make an award. Providers offering programmes leading to QQI awards **must** have their programme(s) validated in accordance with current validation policy (see [www.qqi.ie](http://www.qqi.ie)).

Award standards are designed to be consistent with the NFQ's award classes i.e. major, special purpose, supplemental and minor awards. They are expressed in terms of **learning outcomes** i.e. concise statements of what the learner is expected to know or be able to do in order to achieve a particular award. Learning outcomes for FET awards are contained within the associated specifications:

AWARD CLASS	STANDARDS	AWARDS
Major Award	Certificate Specification	Certificate (Levels 1 to 5) Advanced Certificate (Level 6)
Supplemental Award	Supplemental Specification	Supplemental Certificate (Level 3 to 6)
Special Purpose	Specific Purpose Specification	Specific Purpose Certificate (Levels 3 to 6)
Minor Award	Component Specification	Component Certificate (Levels 1 to 6)

Award standards are thresholds, they describe standards of knowledge, skill or competence to be acquired, and where appropriate, demonstrated, by a learner before an award may be made.

Award standards will be reviewed from time to time as necessary. Minor changes may be made by the QQI executive outside the review cycle where necessary. Changes to standards are published on QQI's website. Providers with validated programmes and providers with delegated authority to make awards are responsible for monitoring relevant standards and making necessary responses to changes.

### 3. FET Credit

Every FET certificate and component specification includes an FET credit value (Table 1). FET credit is quantified in multiples of 5 FET credits (up to 50 hours of learner effort). Learner effort is based on the time taken by typical learners at the level of the award to achieve the learning outcomes for the award. It includes all learning time involved including: guided learning hours, self-directed learning and assessment.

**Table 1: FET Credit Values**

NFQ Level	Major Awards Credit Values	Default Credit Values Minor Awards	Other Permitted Minor Award Credit Values	Special Purpose and Supplemental Award Credit Value Ranges
1	20	5	10	
2	30	5	10	
3	60	10	5,20	>5 and <60
4	90	10	5,15,20	>5 and <90
5	120	15	5,10,30	>5 and <120

## Guide to Level

Learning outcomes at this level include a broad range of skills that require some theoretical understanding. The outcomes may relate to engaging in a specific activity, with the capacity to use the instruments and techniques relating to an occupation. They are associated with work being undertaken independently, subject to general direction.

<b>Strand</b>	<b>Sub-strand</b>	<b>Nature of learning</b>
Knowledge	Breadth	Broad range of knowledge
	Kind	Some theoretical concepts and abstract thinking, with significant depth in some areas.
Know How & Skill	Range	Demonstrate a broad range of specialised skills and tools
	Selectivity	Evaluate and use information to plan and develop investigative strategies and to determine solutions to varied unfamiliar problems
Competence	Context	Act in a range of varied and specific contexts, taking responsibility for the nature and quality of outputs; identify and apply skill and knowledge to a wide variety of contexts
	Role	Exercise some initiative and independence in carrying out defined activities; join and function within multiple, complex and heterogeneous groups
	Learning to Learn	Learn to take responsibility for own learning within a managed environment
	Insight	Assume full responsibility for consistency of self- understanding and behaviour

*Extract from 'Determinations for the Outline National Framework of Qualifications': NQAI*